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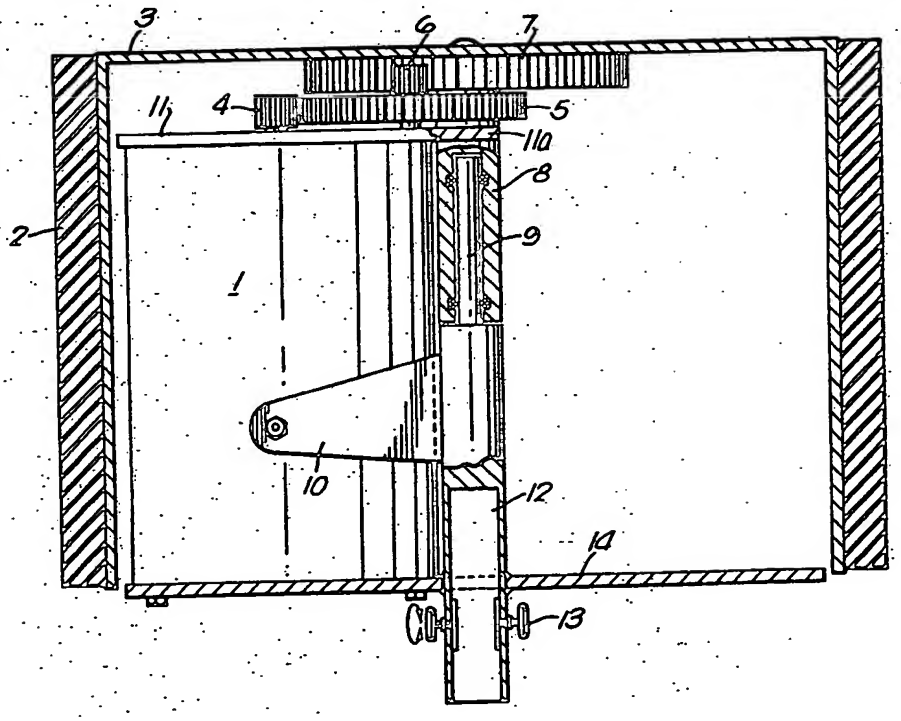
(58) Field of search
B7H

(54) Wheel drive arrangement

(57) The wheel unit for a golf cart or the like is constructed from two main parts which may be easily assembled. The first part comprises a back plate (14) carrying a fixed axle part (12) having means (13) to secure the unit to a trolley or the like. The fixed axle part (12) has a spigot (9) forming a bearing for a rotatable axle part (8). Secured between the back-plate (14) and support bracket (10) of the fixed axle part (12) is a low voltage (12 volt) electric motor (1) with an output drive gear (4). A front plate (11) of the motor (1) is supported by a bearing (11a) on the rotatable axle part (8) and carries an intermediate gear train (5 and 6). Gear (4) drives gear (5) which rotates gear (6) to drive a final gear (7) which is attached to the wheel hub (3) forming the second part of the unit. The hub (3) is secured to the rotatable axle part (8) and has a tyre (2) around the peripheral surface.

The unit may be secured to a stub axle on a trolley or the like in a simple manner by inserting the stub into the sleeve (12) of the fixed axle part (9), then tightening the clamp screws (13).



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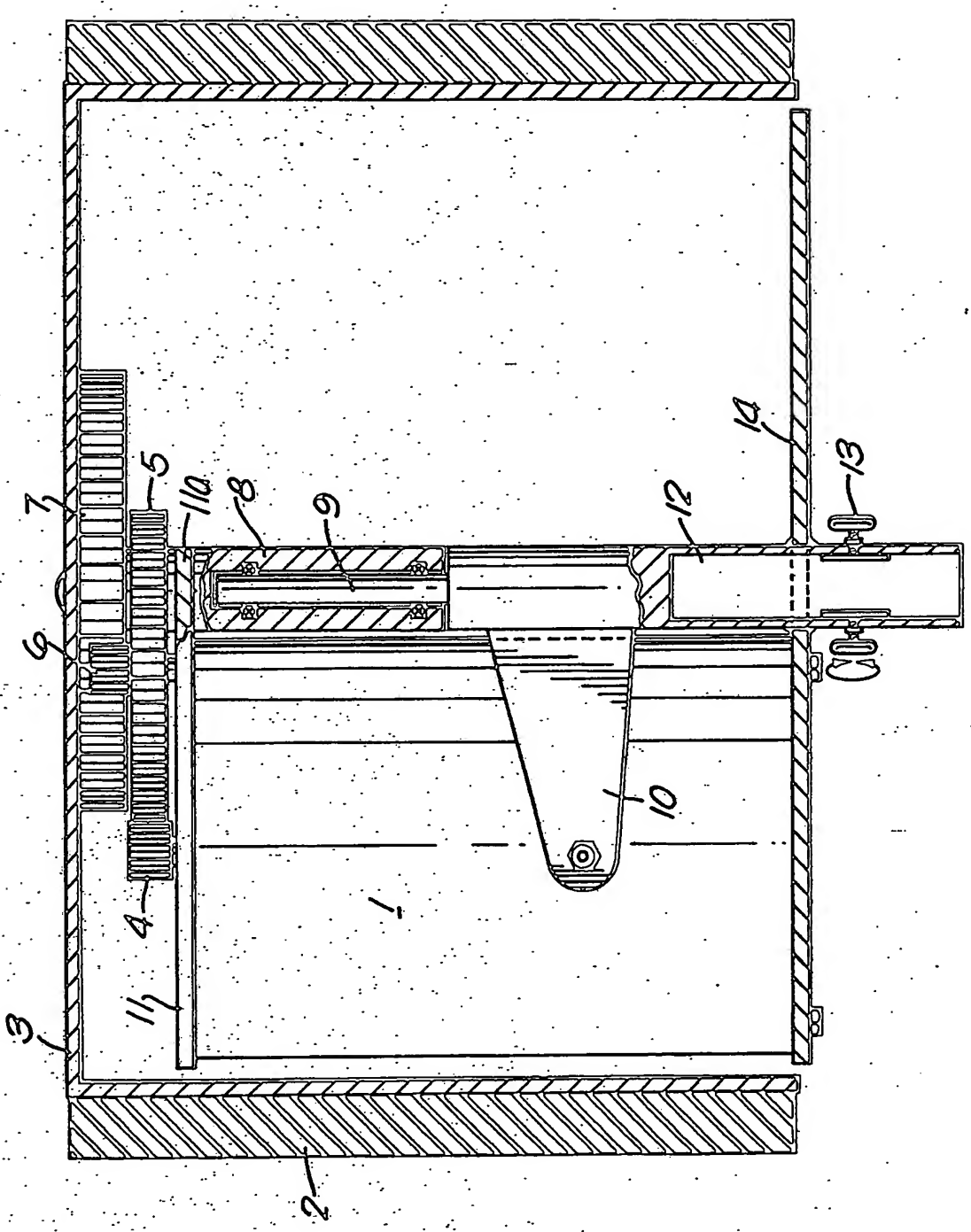
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TITLE

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Wheel Drive Arrangement

This invention relates to a wheel drive arrangement for a golf cart or the like and provides a ground bearing wheel which is driven by a motor.

According to this invention there is provided a wheel assembly having a fixed axle to which a hub structure is rotatably mounted, the fixed axle carrying a drive motor housed within the hub structure and a drive train operatively connecting the motor drive shaft with the hub structure to rotate same relative to the fixed axle.

The drive train preferably couples the motor drive shaft with an axle carried by the hub, said hub axle being coaxial with the fixed axle.

The drive train may be a reduction drive preferably comprising a series of gears. The fixed and rotatable axle parts will preferably be concentric with a bearing assembly located therebetween. The fixed axle part may have a means, such as a clamp, to connect same with a mobile wheeled vehicle, for example a golf cart or trolley.

The outer peripheral surface of the hub preferably

carries a ground bearing tyre. The hub may be cylindrical with the normally inner facing side closed by a back-plate forming a support for the fixed axle and the drive motor, which preferably will be an electric motor.

According to this invention there is also provided a wheel assembly comprising a fixed axle with means for attachment to an item of apparatus such as a golf cart, a back plate member secured to the fixed axle part, a drive motor secured to the back plate, a rotatable axle positioned concentrically about part of the fixed axle with an interposed bearing assembly, a drum shaped wheel unit secured to the rotatable axle and having a peripheral surface extending to enclose the drive motor and terminating adjacent the back plate, a drive train having an intermediate gear driven by a gear positioned on the drive motor, said intermediate gearing driving a gear fixed to the wheel unit.

One embodiment is described by way of example only in the drawing which shows a wheel drive unit in section, for example for use on a golf trolley, shopping trolley or wheelbarrow.

The wheel unit for a golf cart or the like is constructed from two main parts which may be easily assembled. The first part comprises a back plate 14 carrying a fixed axle part 12 having means 13 to secure

the unit to a trolley or the like. The fixed axle part 12 has a spigot 9 forming a bearing for a rotatable axle part 8. Secured between the back-plate 14 and support bracket 10 of the fixed axle part 12 is a low voltage (12 volt) electric motor 1 with an output drive gear 4. A front plate 11 of the motor 1 is supported by a bearing 11a on the rotatable axle part 8 and carries an intermediate gear train 5 and 6. Gear 4 drives gear 5 which rotates gear 6 to drive a final gear 7 which is attached to the wheel hub 3 forming the second part of the unit. The hub 3 is secured to the rotatable axle part 8 and has a tyre 2 around the peripheral surface.

The unit may be secured to a stub axle on a trolley or the like in a simple manner by inserting the stub into the sleeve 12 of the fixed axle part 9, then tightening the clamp screws 13. Other means for securing may be provided.

The power source for the motor may comprise a separate battery or the battery may be located within the hub 3.

This invention also provides a wheeled apparatus such as a golf or shopping trolley, embodying the drive unit as broadly described and exemplified herein.

CLAIMS

1. A wheel assembly having a fixed axle to which a hub structure is rotatably mounted, the fixed axle carrying a drive motor housed within the hub structure and a drive train operatively connecting the motor drive shaft with the hub structure to rotate same relative to the fixed axle.

2. A wheel assembly according to Claim 1, wherein the motor drive shaft is coupled with an axle carried by the hub.

3. A wheel assembly in accordance with Claim 2, wherein the hub axle is coaxial with the fixed axle.

4. A wheel assembly according to any preceding claim, wherein the drive chain comprises a reduction drive.

5. A wheel assembly according to any preceding claim, wherein the fixed axle and hub axle are concentric with a bearing assembly therebetween.

6. A wheel assembly according to any preceding claim wherein the fixed axle has a means to secure same to a

structure.

7. A wheel assembly according to any preceding claim, wherein the hub is cylindrical with the normally inner facing side closed by a back-plate forming a support for the fixed axle and the drive motor.

8. A wheel assembly comprising a fixed axle with means for attachment to an item of apparatus such as a golf cart, a back plate member secured to the fixed axle part, a drive motor secured to the back plate, a rotatable axle positioned concentrically about part of the fixed axle with an interposed bearing assembly, a drum shaped wheel unit secured to the rotatable axle and having a peripheral surface extending to enclose the drive motor and terminating adjacent the back plate, a drive train having an intermediate gear driven by a gear positioned on the drive motor, said intermediate gearing driving a gear fixed to the wheel unit.

9. Wheel assembly in accordance with Claim 8 wherein the drive motor has a drive shaft extending parallel to the axles with the motor casing positioned and secured adjacent the fixed drive shaft, the motor casing rotatably supporting the intermediate gear.

10. A wheel assembly substantially as described herein and illustrated with reference to the drawings.

11. A mobile vehicle incorporating one or more wheel assemblies in accordance with any preceding claim.

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